

## DRAWINGS ATTACHED



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## (54) HOUSEHOLD OVEN

(71) We, NEFF - WERKE CARL NEFF G.M.B.H., of Bahnhofstrasse 9-11, 7518 Bretten, Federal Republic of Germany, a German Body Corporate, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The invention relates to a household oven.

A household oven has been proposed in which a switching chamber is provided inside the oven housing behind a facia for mounting electric switch gear and controls for the oven. Behind the rearwardly open switching chamber there is a fan which draws in air through holes underneath the oven in the region of the bottom, wherein the air passes laterally and behind inside the oven housing and is blown into the switching chamber from where it passes outside underneath the facia. This throughput of air through the inside of the oven housing has the object of reducing the maximum outside temperature of the oven. However, due to the fact that the heated air, before leaving the oven, passes also through the switching chamber and over the switching and control elements located therein, these elements are continuously affected by a flow of very hot air. In consequence, premature fatigue phenomena may occur in the electrical switching and control elements, thereby reducing their switching accuracy and making necessary a replacement of these switching and control parts.

According to the invention there is provided an oven having one or more control mechanisms therefor and a fan arranged to circulate air around the oven exterior and simultaneously draw cooling air over the control mechanism(s).

The control mechanism(s) of a domestic oven can thus by simple means be reliably

protected against high temperatures with a view to preventing overheating of the control mechanism(s). Preferably said control mechanism(s) comprise(s) switching or control element(s) located in a switching chamber.

The switching chamber is preferably provided with inlet orifices for cold air and air passages opposite these cold air inlets and connecting the switching chamber with an air inlet chamber, whereby the cold air drawn in through the switching chamber can be guided for mixture in the air inlet chamber with heated air surrounding the interior of the oven housing, and for removal of this mixed air by by-passing the switching chamber.

The oven maybe a household oven, preferably a split level oven. The switching chamber may be fronted by a switch facia.

An embodiment of the invention is shown in the drawing and will be described in detail in the following.

In the drawing:—

Fig. 1 is a household oven viewed in 70 perspective;

Fig. 2 is a horizontal cross-section through the household oven in the region of the switching chamber;

Fig. 3 and Fig. 4 are each a vertical 75 cross-section through at least the switching chamber of the household oven in two parallel vertical planes.

Numeral 1 indicates a household oven which is preferably intended for installation in kitchen furniture as a so-called split level oven. This household oven consists of a baking and roasting chamber 2 with a door 2', heated by heating elements not shown, and a switch facia 3 with selector knob 4 and a switching chamber 5, located behind the facia and housing the switching and control elements 6 (constituting the aforesaid "control mechanism(s)") for the heating elements of the baking chamber 2. 90

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The switching chamber is closed against the interior of the oven by a partition 7. Since after the installation of this domestic oven in the kitchen furniture, the oven is completely surrounded by parts of the furniture, it is equipped with an air cooling system in order to keep the outside temperature of the oven housing and thus also of the adjacent parts of the furniture at a low level. For this purpose a blower 8, preferably a tangential fan, is arranged behind the wall 7 of the switching chamber 5. This fan is associated with an air suction chamber 9. Above the fan 8 there is a neutral pressure chamber 9' adapted to house, *inter alia*, connections (not shown in detail). In this air suction chamber 9, outside air is inducted by the fan through air inlets 10 arranged in the front side of the oven housing in the bottom and lateral zones, the air flows upwardly in the lateral and the rear parts of the baking chamber 2 towards the air suction chamber 9, thereby surrounding the oven with cool air and removing radiation heat, so that overheating of the side walls of the oven is prevented. The inducted hot air is transported by the fan 8 into a chimney shaped channel 11, downstream of the fan, from where it escapes through air slots 12. The chimney-shaped channel 11 is arranged in this embodiment adjacent to the switch chamber 5 and the hot air to be removed is conducted in this oven towards the front and underneath the switch facia into the surrounding air.

In order to keep also the switching chamber 5 at a low temperature and to protect the switching and control elements located therein against overheating, the switching chamber 5 has preferably in its upper region cold air inlets 13, and in its lower region, opposite the cold air inlets, air passages 14 whereby an air flow connection is made between the switching chamber and the air suction chamber 9, and thus with the fan 8. By the arrangement of cold air inlets 13 in the upper region of the switching chamber or of the switch facia 3, a sufficiently large distance is produced between the hot air current issuing underneath the switch facia 3, preventing parts of the hot air current from being carried into the switching chamber 5 by the entering flow of hot air. The flow of cold air drawn in by the fan 8 flows preferably obliquely through the switching chamber 5 thereby cooling the switching and control elements continuously and passes from the switching chamber 5 through the air passages 14 into the air suction chamber 9 of the fan 8. There, this air current, which has only been slightly heated owing to its short passage, is mixed with the very hot flow of air surrounding the outside of

the interior of the oven housing, or the baking chamber 2, and is removed simultaneously from the air suction chamber 9, serving as mixing chamber through the above described tapering channel 11 below the switching facia 3, thus by-passing the switching chamber 5.

The application of the invention is of particular advantage also for cookers which comprise a method for the automatic cleaning of the inner surfaces of the baking or roasting chamber from residues of food, by heating the baking chamber. According to this method, the interior of the oven is heated to a temperature which is substantially higher than the normal baking or roasting temperature, and at which food residues are pyrolytically decomposed. The decomposed food residues are transformed into gaseous products and pass through an oxidising device or the like before they are removed into the kitchen air.

The advantages of the above described embodiments of the invention consist mainly in the fact that the switching chamber and the switching and control elements arranged therein are continuously cooled by a flow of fresh cool air. Another advantage lies in the fact that, due to the mixing of the air current guided through the switching chamber, with the flow of hot air flowing in the interior of the oven, the outlet temperature of the air current leaving the oven housing is substantially reduced.

#### WHAT WE CLAIM IS:—

1. An oven having one or more control mechanisms therefor and a fan arranged to circulate air around the oven exterior and simultaneously draw cooling air over the control mechanism(s).

2. An oven according to Claim 1, wherein said control mechanism(s) comprise(s) switching control element(s) located in a switching chamber.

3. An oven according to Claim 2, wherein the switching chamber is provided with inlet orifices for cold air and air passages opposite these cold air inlets and connecting the switching chamber with an air inlet chamber, whereby the cold air drawn in through the switching chamber can be guided for mixture in the air inlet chamber with heated air surrounding the interior of the oven housing, and for removal of this mixed air by by-passing the switching chamber.

4. An oven according to Claim 2 or Claim 3, wherein the switching chamber is fronted by a switch facia.

5. An oven according to Claim 4, when dependent upon Claim 3, wherein the mixed air is removable from underneath the switch facia.

6. An oven according to Claims 3 or 5 or Claim 4 when dependent upon Claim 3, in which the mixed air is removable through a channel located downstream of the fan.
- 5 7. An oven according to Claim 6, characterised in that the channel tapers towards its outlet.
8. An oven according to Claim 4 when dependent upon Claim 3 in which the cold
- 10 air inlet orifices for the switching chamber are arranged above the switch facia.
9. An oven according to any one of Claims 2 to 8 wherein the air passages connecting the air inlet chamber with the
- 15 switching chamber are located in the lower part of the switching chamber.
10. An oven according to any preceding claim adapted for household or domestic use.
11. A split-level oven according to Claim 20
- 10.
12. An oven substantially as herein described with reference to the accompanying drawings.
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FIG. 1.

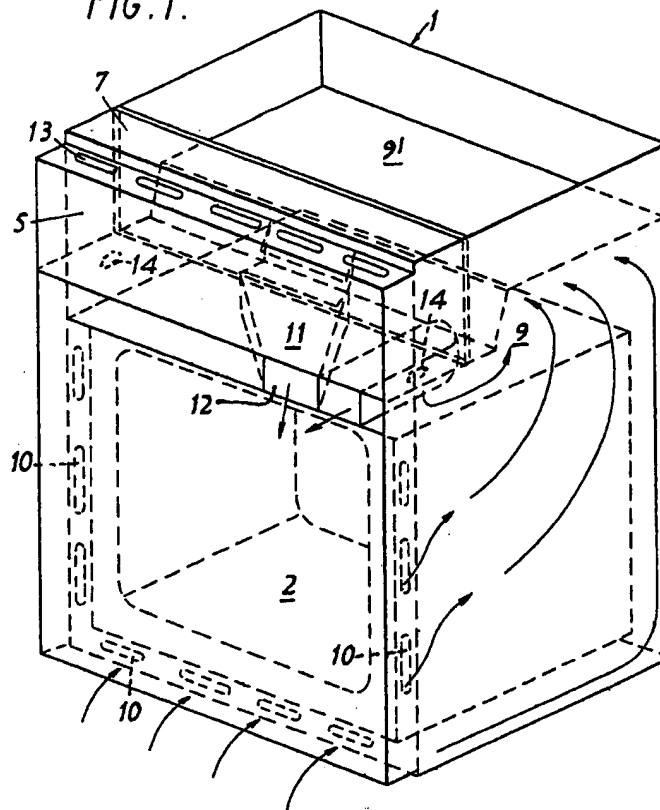


FIG. 2.

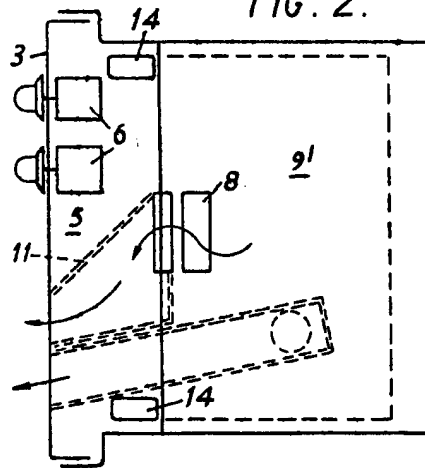


FIG. 3.

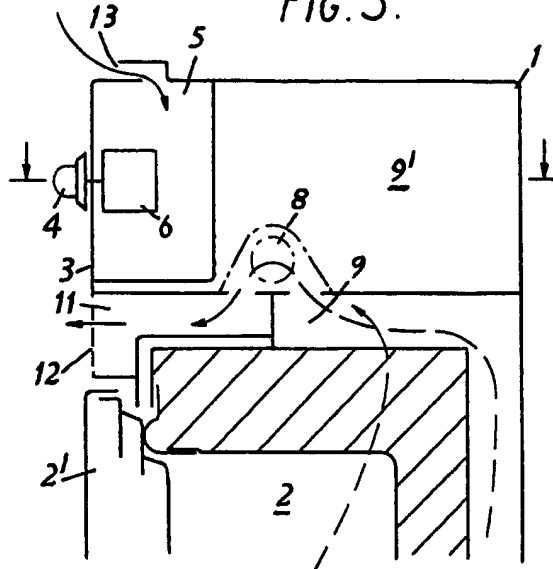


FIG. 4.

